HISTORIC PROPERTY INVENTORY FORM

State of Washington, Department of Community Development
Office of Archaeology and Historic Preservation
111 21st Avenue Southwest, Post Office Box 48343
Olympia, Washington 98504-8343 (206)753-4011

INDENTIFICATION SECTION

Field Site No. 117-N **OAHP No.** _____ **Date Recorded** 13-Feb-95
Site Name Historic Ventilation Filter Building
Common _____
Field Recorder Kristine M. Bowen, Evaluator: Darby Stapp
Owner's Name U.S. Department of Energy, Richland Operations Office
Address P.O. Box 550
City/State/Zip Code Richland, WA 99352

Status
- [X] Survey/Inventory
- [ ] National Register
- [ ] State Register
- [ ] Determined Eligible
- [ ] Determined Not Eligible
- [ ] Other (HABS, HAER, NHL)
- [ ] Local Designation

Photography
Photography Neg. No. (Roll No. & Frame No.) Roll 11, Frame 25
View of West Side
Date 1994

Classification [ ] District [ ] Site [X] Building [ ] Structure [ ] Object
Distric Status [X] NR [ ] SR [ ] LR [ ] INV
Contributing [X] **Non-Contributing** [ ]
District/Thematic Nomination Name Hanford Site Manhattan Project and Cold War Era Historic District

LOCATION SECTION
Address 100-N Reactor Area, Building 117-N
City/Town/County/Zip Code Richland, WA/Benton County/99352
Twp. 14N **Range** 26E **Section** 28 **1/4 Section** NW **1/4 1/4 Sec** SE
Tax No./Parcel No. _____ **Acreage** _____
Quadrangle or map name Coyote Rapids 7.5 min. series
UTM References Zone 11 **Easting** 303974 **Northing** 5172485
Plat/Block/Lot _____
Supplemental Map(s) 100-N Area Buildings

Description Section
Materials & Features/Structural Types
Building Type Industrial
Plan Rectangular
Structural System Reinforced Concrete
No. of Stories 1

Roof Type
- [X] Gable
- [ ] Flat
- [ ] Monitor
- [ ] Gambrel
- [ ] Shed
- [ ] Hip
- [ ] Pyramidal
- [ ] Other (specify)

Cladding (exterior Wall Surfaces
- [ ] Log
- [ ] Horizontal Wood Siding
  - Rustic/Drop [ ]
  - Clapboard [ ]
- [ ] Wood Shingle
- [ ] Board and Batten
- [ ] Vertical Board
- [ ] Asbestos/Asphalt
- [ ] Brick
- [ ] Stone
- [ ] Stucco
- [ ] Terra Cotta
- [X] Concrete/Concrete Block
- [ ] Vinyl/Aluminum Siding
- [ ] Metal (specify) _____
- [ ] Other (specify) _____

Roof Material
- [ ] Wood Shingle
- [ ] Wood Shake
- [ ] Composition
- [ ] Slate
- [ ] Tar/Built-up
- [ ] Tile
- [X] Metal (specify) Galvanized Sheet Metal
- [ ] Other (specify) _____
- [ ] Not visible

Foundation
- [ ] Log
- [ ] Post & Pier
- [ ] Stone
- [ ] Brick
- [ ] Not visible

Concrete
- [ ] Block
- [X] Poured
- [ ] Other (specify) _____

Integrity (Include detailed description in **Description of Physical Appearance)**

	Intact	Slight	Moderate	Extensive
Changes to plan	X			
Changes to windows				
Changes to original cladding	X			
Changes to interior				
Other (specify)				

High Styles/Forms (Check one or more of the following)
- [ ] Greek Revival
- [ ] Gothic Revival
- [ ] Italianate
- [ ] Second Empire
- [ ] Romanesque Revival
- [ ] Stick Style
- [ ] Queen Anne
- [ ] Shingle Style
- [ ] Colonial Revival
- [ ] Beaux Arts/Neoclassical
- [ ] Chicago/Commercial Style
- [ ] American Foursquare
- [ ] Mission Revival
- [ ] Spanish Colonial Revival/Mediterranean
- [ ] Tudor Revival
- [ ] Craftsman/Arts & Crafts
- [ ] Bungalow
- [ ] Prairie Style
- [ ] Art Deco/Art Moderne
- [ ] Rustic Style
- [ ] International Style
- [ ] Northwest Style
- [ ] Commercial Vernacular
- [ ] Residential Vernacular (see below)
- [X] Other (specify) Industrial Vernacular

Vernacular House Types
- [ ] Gable Front
- [ ] Gable Front and Wing
- [ ] Side Gable
- [ ] Cross Gable
- [ ] Pyramidal/Hipped
- [ ] Other (specify) _____

NARRATIVE SECTION

Study Unit Themes (check one or more of the following)

	Agriculture		Conservation		Politics/Government/Law
	Architecture/Landscape Architecture		Education		Religion
	Arts		Entertainment/Recreation		Science & Engineering
	Commerce		Ethnic Heritage (specify)		Social Movements/Organizations
	Communications		Health/Medicine		Transportation
	Community Planning/Development		Manufacturing/Industry	X	Other (specify) Manahattan Project & Cold War Era
			Military	X	**Study Unit Sub-Theme(s) (specify)**
					Cold War/Nuclear Fuel Production
					Waste Management (Air)

Statement of Significance

Date of Construction 1964 Architect/Engineer/Builder General Electric

X In the opinion of the surveyor, this property appears to meet the criteria of the National Register of Historic Places.

X In the opinion of the surveyor, this property is located in a potential historic district (National and/or local).

The 117-N Ventilation Filter Building was constructed in 1964 and served an essential function in the 105-N Ventilation System, designed to prevent the spread of radioactive contamination. 105-N had five ventilation zones, also known as confinement zones, each served by supply and exhaust fan units, and plenums connected to duct work containing dampers and supply grilles. Air exhausted from Zone 1 (primary radiation area) and Zone II (secondary radiation area) was routed through a high-efficiency particulate air filter system located in the 117-N Filter Building and then discharged to the atmosphere from the 116-N Ventilation Stack. Air from Zone III (normal access areas; metal preparation storage basin, and transfer area), which was normally contamination free, was routed through the 117-N Building but did not pass through any filters; if airborne contamination was detected in a Zone III area, roof exhausters would be shut down and Zone III exhaust air would be routed through the Zone II Exhaust System. Zone IV (unlimited access areas and maintenance shop area) and Zone V (warranted access area) were exhausted directly to the atmosphere.

The 117-N Building housed banks of high-efficiency particulate air filters and charcoal filters, which removed moisture, particulates, and airborne contamination and radionuclides from the 105-N exhaust gases. The Zone I filter structure was composed of two 50% capacity parallel cells (Cells A and B). Filter Cell C provided 100% capacity to the Zone II exhaust system. The standby or emergency cell (Cell D) was capable of 100% Zone II capacity filtration or 50% capacity filtration of Zone I. The first stage of the filter cell was designed as a moisture separator, which prolonged the effectiveness of the second-stage filter. The aluminum mesh moisture separator removed entrained moisture from the exhaust air that might be released during a confinement incident. First-stage filter banks were installed in Cells A, B, and D. The second-stage filter bank consisted of high-efficiency, fire-retardant material designed for continuous operation at a maximum temperature of 200^{o} F and a relative humidity of 100%. The minimum filtration efficiency of the second-stage filter bank was 99.9% for particulate containment. The third-stage filter bank had similar construction features of the second filter bank. The filter media contained activated carbon capable of removing at least 99.9% of all particulate matter and a minimum of 95% of elemental halogen gases that reached the cell.

This property is not associated with an important person (Criterion B), does not possess any distinctive architectural features or methods of construction (Criterion C), and does not qualify under Criterion D as the principal source of important information. However, the 117-N Building qualifies under Criterion A due to its association with the Cold War production of plutonium at N Reactor, and its contribution to Reactor Operations, specifically the Reactor Ventilation System. Therefore, it is the conclusion of the U.S. Department of Energy that the 117-N Building is eligible under Criterion A for inclusion on the National Register of Historic Places as a contributing property within the Hanford Site Manhattan Project and Cold War Era Historic District.

Description of Physical Appearance

The 117-N Building is a rectangular, one-story, reinforced concrete building with a flat galvanized sheet metal roof and poured concrete foundation. A concrete stairway provides access over the earthen and concrete berm surrounding the building. A tunnel was built that leads from the 117-N Building to a second building similar to the 117-N Building, but it was buried over and never used. This building measures approximately 79 ft by 56 ft (24 m by 17 m); 4,424 ft^2 (408 m^2) and has undergone no significant changes.

The N Reactor UTM coordinates are as follows: Northeast corner - 303974E, 5172485N; southeast corner - 303974E, 5171639N; southwest corner - 303069E, 5171639N; northwest corner - 303069E, 5172485N.

Major Bibliographic References

Westinghouse Hanford Company. 1988. *N Reactor Updated Safety Analysis Report* . WHC-SP-0297, Volume 6, Section 11.3.2.

UNC Nuclear Industries. 1979. *N Reactor Plant Manual* . UNI-M-94, May 2, 1979.

Architectural & Structural Plans Filter Building, Drawing No. H-1-28401, 1970.